

V. SUSTAINABLE DESIGN

Mission

The Las Positas mission is one of achieving academic, social, economic, and ecological sustainability. Blending knowledge and experience with passion and innovation, the vision for the built environment of the Las Positas campus reflects the foresight of the College as an institution and the willingness of the College stakeholders – faculty, staff, students, and community – to work together to find new solutions and improve on old practices.

The mission statement included herein originated from the campus sustainability task force and was endorsed by the College administration. Representing a diverse group of stakeholders including staff, faculty, and the local community, the mission underscores the depth of commitment and commonality of purpose over a wide range of expertise and perspective.

Successful sustainable development efforts, especially those that take place on a campus level, rely heavily on mission statements such as this to draw stakeholders together and move them forward under a single inclusive banner.

" Create a Model Sustainable Campus" - College Mission Statement - October 2004



Green Roof To Reduce Heat Island Effect

Goals

In the same spirit that sets Las Positas College apart as a premier community educational institution that shapes and educates those passing through its doors each year, the College has set goals that reflect and support its educational focus. Recognizing that learning results not only from what is taught in classrooms, but also from what is experienced in life, the College has sought to incorporate the concepts of stewardship and foresight into the built environment that surrounds its students.



Alternative Transportation

The goals of the College are to fashion a campus that:

- Is designed and intended to teach
- Uses water and resources responsibly
- Incorporates life cycle planning and decision making
- Builds LEED™ Silver and Gold buildings
- Achieves low maintenance and operating costs
- Applies renewable energy sensibly
- Creates building forms and landscape that influence climate



Absorption Coolers

Sustainable Strategies

Developing locally appropriate strategies that are tailored to a given development is one of the first steps to transitioning to greater regional stewardship and cost effectiveness. As such strategies differ out of necessity from place to place, being shaped and formed by regional imperatives and site specific opportunities and constraints, plans are developed that paint a picture of sustainability in a visual and more easily communicated style. Although not all of the strategies that are later detailed in the design guidelines are identified in the following sustainability plans, each provides a brief glimpse into a possible future.

In all cases, indicators have been identified that would serve to measure and track progress over the course of building out the masterplan. To improve overall awareness, such indicators are intended to be published within the campus communication media (websites, annual publications, etc).

The following plans follow:

- Site & Transportation
- Building Green
- Embracing Renewables
- Planning for Water Conservation
- Targeting Energy

Site and Transportation

The campus site will be developed to reduce light pollution, control and manage stormwater flows, and reduce the harmful effects of the "heat island effect". Light pollution from site light fixtures will be minimized wherever possible via the use of shielded lamps that eliminate the spilling of unused light into the sky. In addition, light spillage from building interiors will be curtailed through intelligent and efficient design practices.

Stormwater will be managed and treated through a series of best management practices including the capture and cleaning of runoff by pervious vegetated surfaces. Bioswales will continue to be used on the campus with overflows through a system of backfilling sub-grade detention areas. Where surface gradients allow, pervious paving systems (pavers, pervious concrete, pavers) will be used beneath parking stalls.

The tendency for hardscape to absorb heat and elevate local temperatures will be reduced through the increased use of tree shading in parking lots and

the presence of light colored and pervious surfaces. In addition, a localized photovoltaic canopy over some parking stalls will provide both shade and energy production.

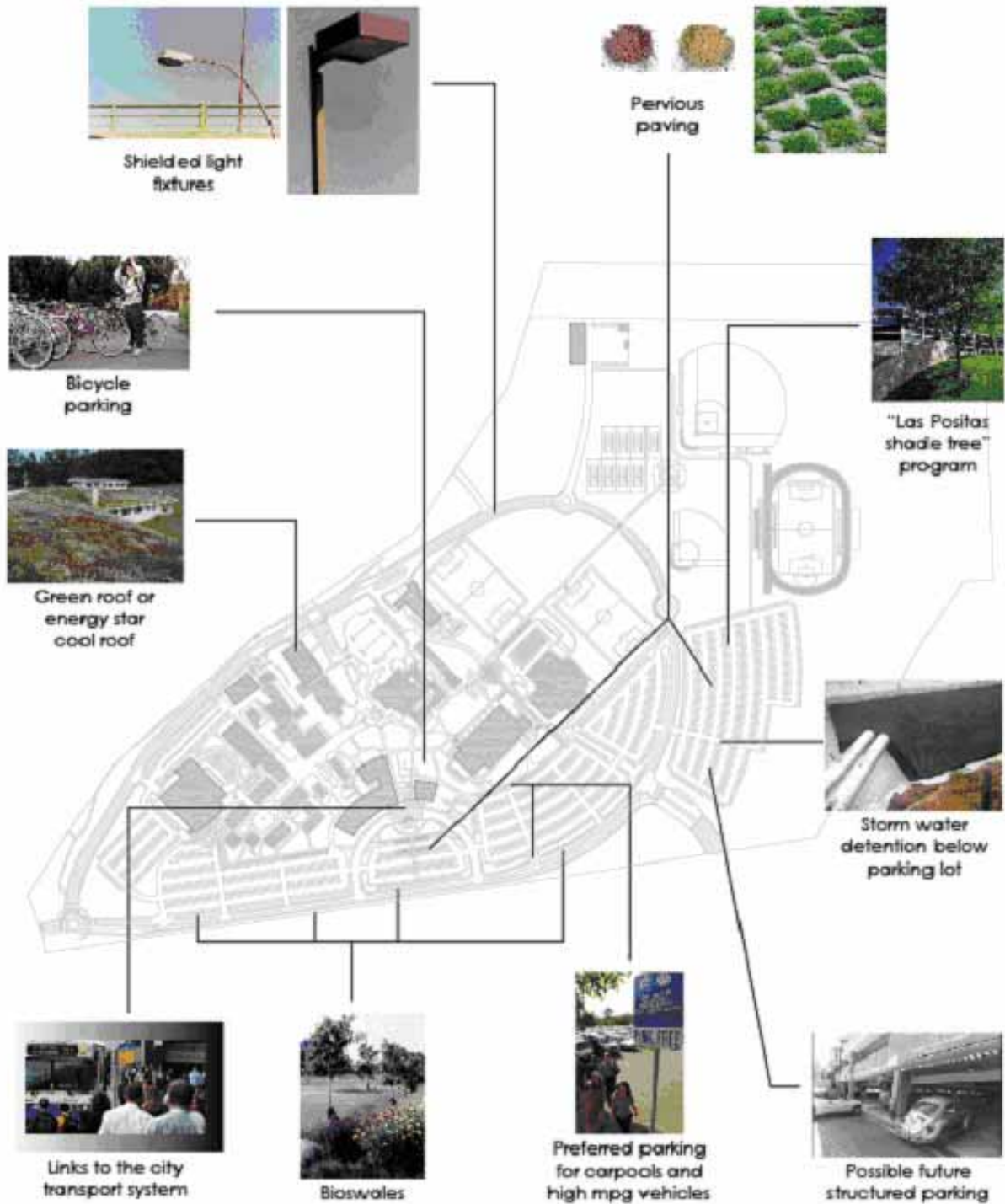
Given that transportation impacts can have such a significant impact on site sustainability, Las Positas hopes to manage faculty staff and students travel demand to reduce reliance single car transportation. Through improved transit service, modified class schedules (to limit peak demand), carpool incentives, telecommuting and remote instruction strategies, as well as the increased support of pedestrian and bicycling improvements, significant inroads are possible.

Indicators to measure progress:

- % Permeable or Captured Surfaces (or total GSF)
- Number of Trees Planted
- Parking Stall Density (per student)



Photovoltaic Panels Covering Parking Lot



SITE & TRANSPORTATION STRATEGIES

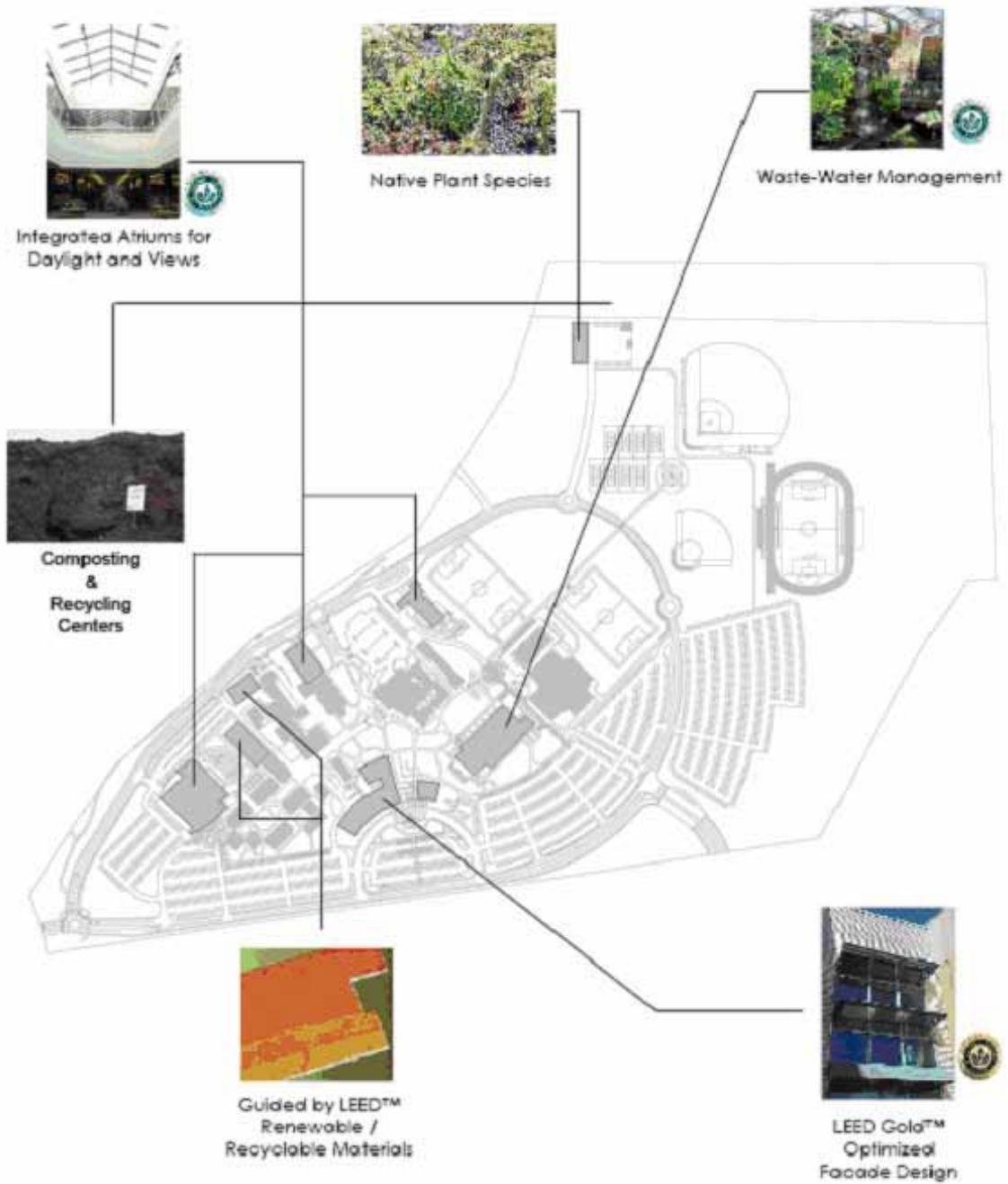
Building Green

The intensity with which “green building” has grown over the past decade goes well beyond simple environmental motivations. The burgeoning knowledge and excitement is due to a more fundamental shift that emphasizes triple bottom line thinking and a synthesis of solutions that together are stronger than the sum of their parts. Las Positas is dedicated to increasing the levels of sustainability into the College’s built environment. Funds permitting the college it has elected to pursue a strategy in which one building seeks a Gold level certification within the LEED™ Rating System while two others seek LEED™ Silver certification and the remaining buildings are guided by the LEED™ rating system during the course of design. If funds are not available for certification a LEED™ rating equivalent should be aggressively pursued. A “Leadership paradigm” functions to set a high mark and knowledge base from which other buildings can capitalize.

As a result of the green building process, strategies for indoor environmental quality, materials selection, resource efficiency, and local site development will be incorporated.

Indicators to measure progress:

- LEED™ Certified GSF on campus
- LEED™ Guided GSF on campus



BUILDING GREEN STRATEGIES

Embracing Renewables

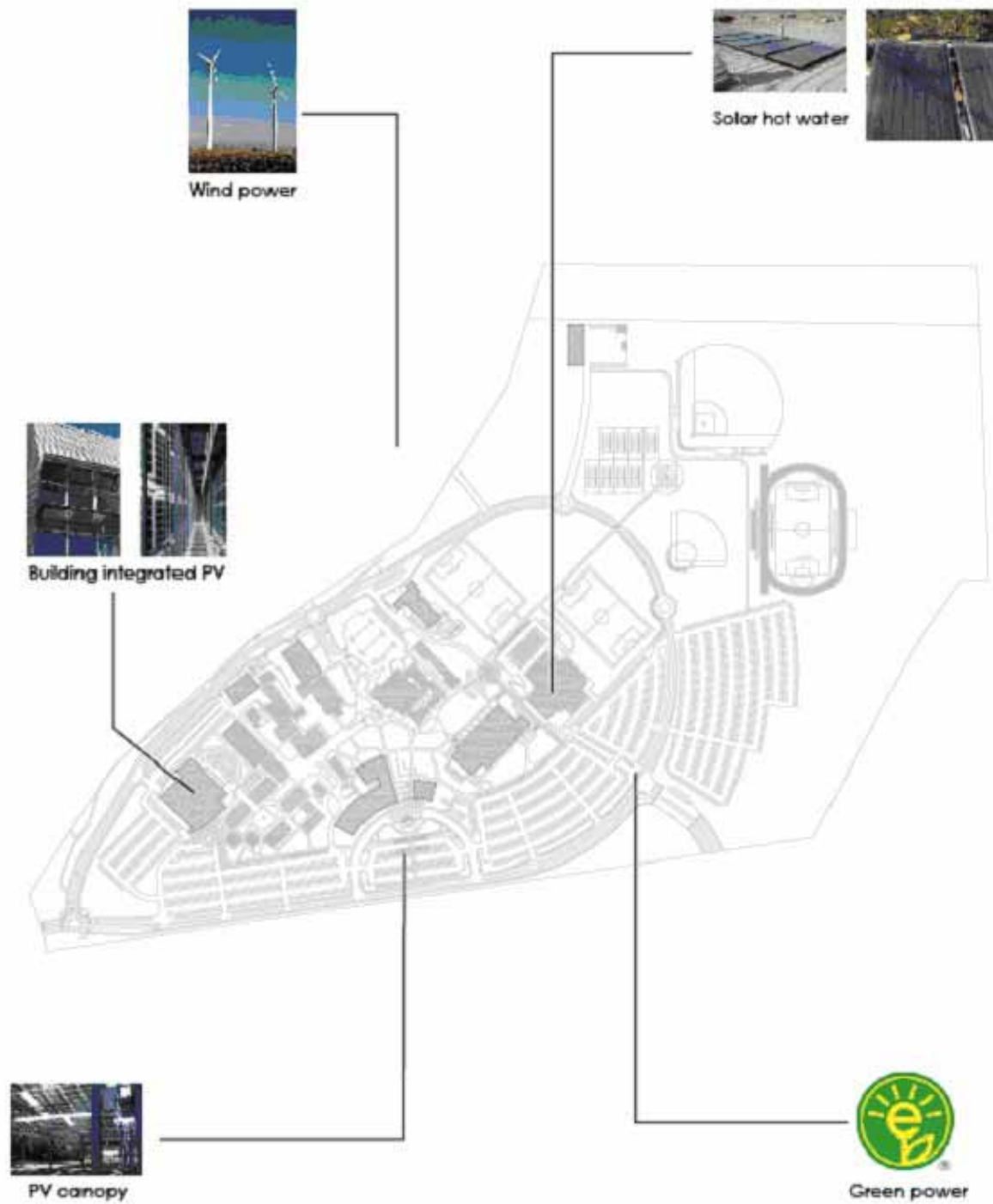
Las Positas College is keen to make a bold statement and commitment to the use of renewable energy sources. As such, the College intends to source as much as possible of its energy from renewable sources. In considering how best to make a cost effective and demonstrable investment in alternative sourcing, the College explored multiple strategies. The most attractive was found to be a combination of solar photovoltaic (PV), solar hot water (SHW), and tradable renewable certificate (TRC) purchasing. The solar PV array is intended to start as a small parking canopy system of approximately 30 to 60kWp located in front of the campus drop off. The intention is to capitalize from the systems modularity and continually dropping costs to grow the system organically into a much larger array covering multiple vehicle rows and adjacent parking lots. In addition to capturing currently available incentives, and in order to connect to the student population, the system will be supported in part by volunteered student contributions made optional on parking permit purchases³. Solar hot water is anticipated to be incorporated either as a supplemental domestic and heating hot water source on new buildings and/or as a primary heating system for the new swimming pool. Lastly, TRC's are intended to make up the balance of the renewable energy supplied to the school⁴. As the most flexible and least capital intensive technological option, TRC's are an excellent supplementary measure. To showcase their impact, the entry signage to the campus as well as the College website and communication materials should incorporate the claim of reduced fossil fuel dependence.

Indicators to measure progress:

- Offset Greenhouse Gas Emissions
- Percentage of Monthly Electrical Consumption from Renewables

³ The voluntary contribution will likely range from \$1.00 per pass to \$20.00 per pass and may be incorporated as a simple check box(s) on the permit application. It is suggested that the College maintain a design standard document and cost agreement with multiple system integrators so that whenever the fund pool reaches a given threshold of \$10k to \$30k additional stalls may be added without incurring design cost.

⁴ See the design strategies document for additional detail as to the various technologies discussed and reviewed.



RENEWABLE ENERGY STRATEGIES

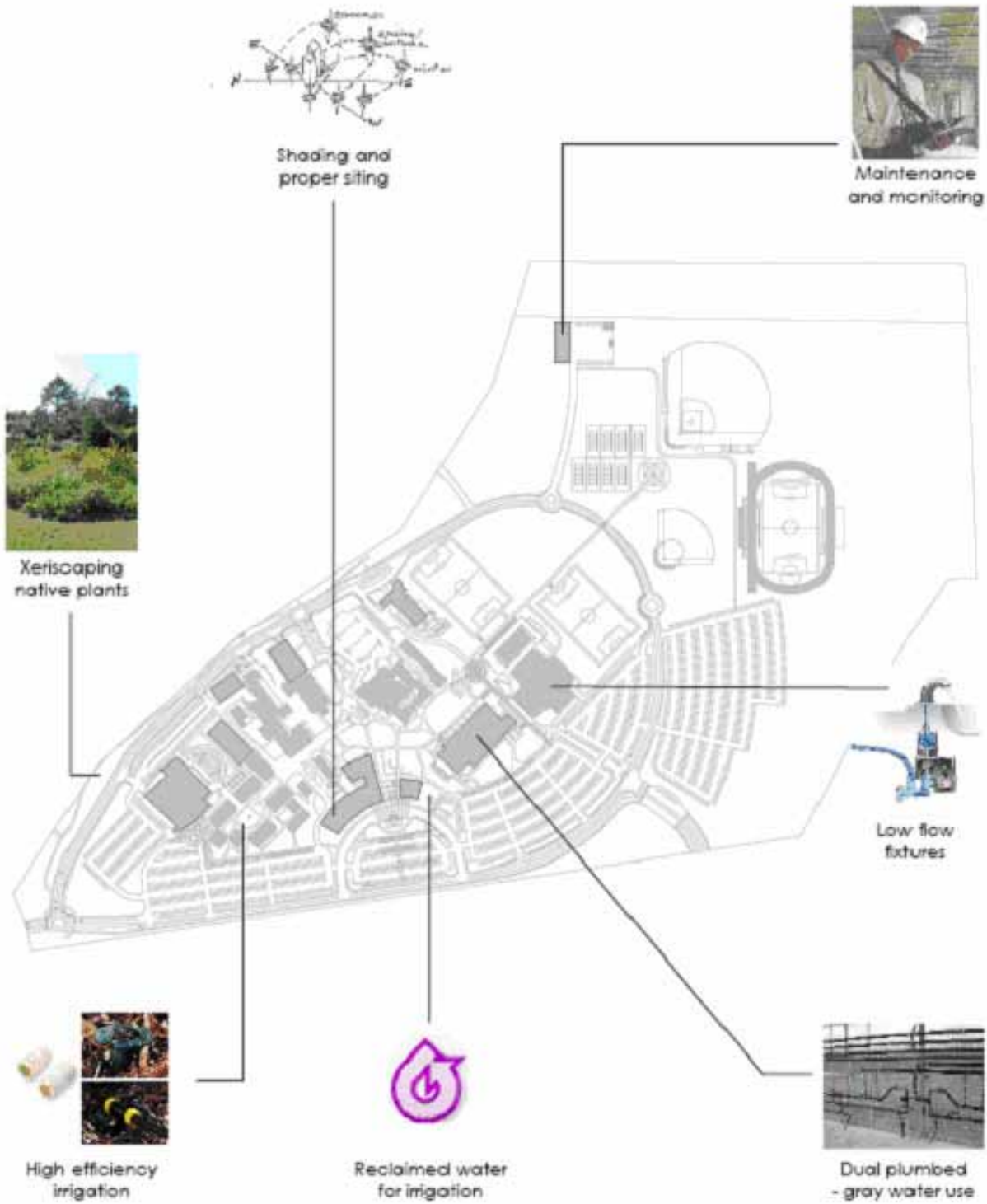
Planning for Water Conservation

Water is an increasingly important resource throughout California and the region. Indeed, Las Positas College is already attending to principles of low potable water use consumption. The availability of reclaimed water on the site allows for significant reduction and the foresight of the facilities staff in limiting the areas that require irrigation has led to a generally low overall site demand. That said, the campus has identified numerous areas for further reduction including the possibility of incorporating low flow (0.5gpm) faucets, waterless urinals, and dual plumbing (to allow reclaimed water to be used for sewage conveyance within buildings). In addition, a continual focus on maintenance and monitoring of use will assure that leaks and system inefficiencies are corrected in a timely manner.

In seeking to improve energy efficiency, water conservation must be simultaneously addressed. Therefore, hybrid wet/dry cooling towers, shading of evaporative condensers, reduced building cooling loads, and ground coupled systems all provide water savings in combination with energy savings.

Indicators to measure progress:

- Potable Water Use per Student
- Reclaimed Water Use per Student



WATER CONSERVATION STRATEGIES

Targeting Energy Efficiency

With the escalating and often variable cost of electricity and natural gas in California, reducing the College's energy footprint is expected to yield significant economic as well as environmental benefits.

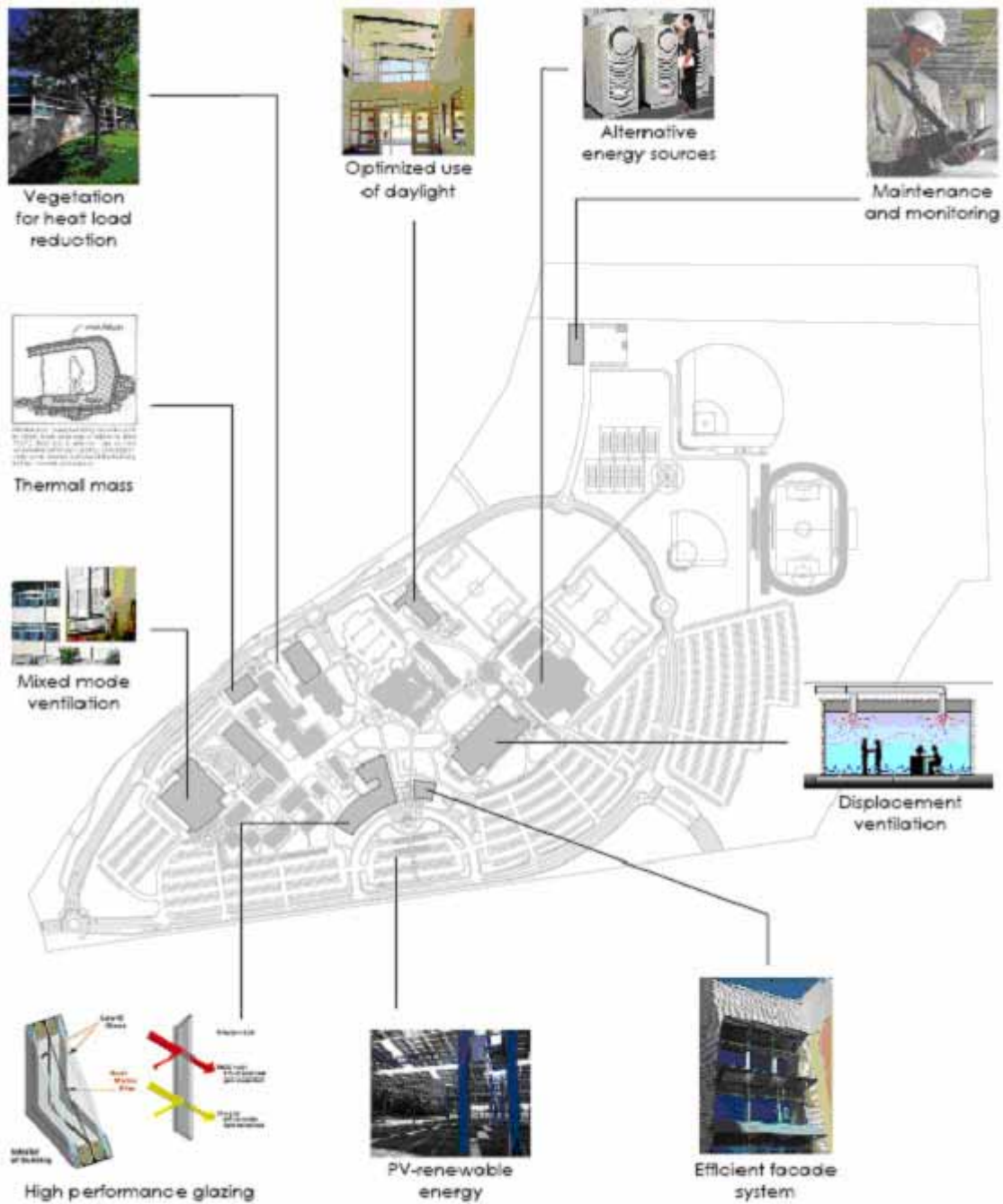
In order to improve building efficiency, the campus intends to employ a design methodology founded on the following steps:

- Employ passive strategies
- Employ efficient active strategies
- Reclaim energy used
- Supplement with renewable energy

To date, the College has serviced its buildings primarily through a relatively inefficient distributed collection of air to air heat pumps and direct expansion (DX) units. Although recent buildings incorporate more efficient water cooled chillers, significant opportunities exist to improve the future and retrofit the existing heating and cooling service to buildings. Refer to the strategies portion of this document as well as the discussion addressing the potential condenser water loop with air to water heat pumps for additional detail.

By employing an efficient design process, the LEED™ rating system, the incorporation of renewable energy, and the diversity gained from a centralized system, the College is very likely to place itself in the vanguard of low energy institutions. In order to assure that new construction and retrofits continue to repay the College well after installation work is completed, a diligent measurement and verification process will be ongoing. Indicators to measure progress:

- Electricity Demand per Conditioned GSF
- Electricity Consumption per Conditioned GSF
- Natural Gas Demand per Conditioned GSF
- Natural Gas Consumption per Conditioned GSF



TARGETING ENERGY EFFICIENCY

Design Strategies

The impact of the built environment spans a wide range of sustainability concerns that range from local to well beyond our regions borders.

Locally, we face environmental and political concerns such as water use and quality, land use, energy use, and ongoing operations and Maintenance costs. On a national and global scale, the building industry has a tremendous impact on the environment of which we are a part, spanning from alteration of community character to resource depletion and global warming.

The entire range of impacts should be taken into consideration when designing and constructing a campus built environment.

The Las Positas Design Strategies were developed in multiple design workshops with College faculty and staff, facility maintenance personnel, and local community stakeholders.

The College has identified five sustainable categories for incorporating design strategies:

- Site Design & Planning
- Water Efficiency
- Energy & Climate
- Materials, Resources, and Waste
- Indoor Environmental Quality

Refer to Volume 2, Exhibits S-01, S-02, S-03, S-04 and S-05 for complete Design Strategies.